Working on Workshops

A Little Pedagogy Goes a Long Way

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Who We Are

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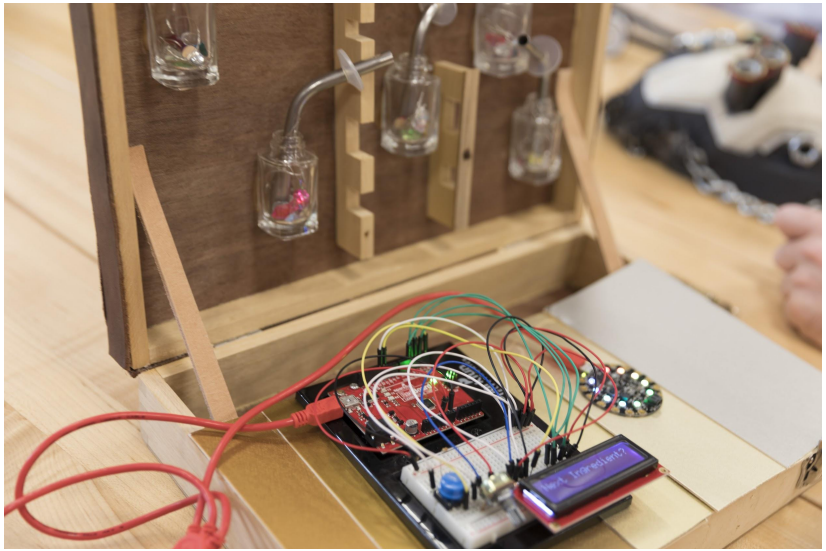
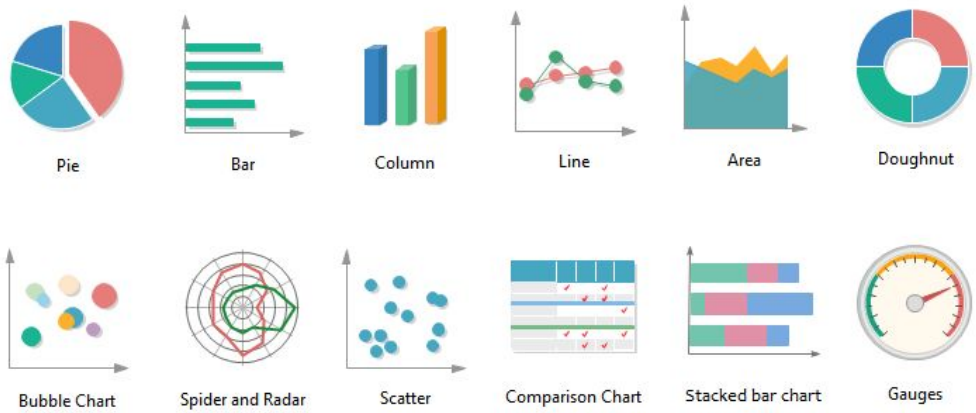
Who are you?

What We Teach





Making and Digital Literacies

Data and Visualization Literacies

Where We Teach

D. H. Hill Jr. Makerspace

Information Technologies Teaching Center

Goals for this workshop

- Develop a basic understanding of Backward Design
- Create a new workshop including Learning Outcomes, Activities and Assessment
- Share a set of resources

Activity 1

Write one of the following on one your notecard:

- A tool you use
- A coding language you use
- A topic you teach or support

Activity 2

Write down one workshop idea/topic per post-it

Go for quantity!

The group with the most post-its wins

Activity 2.5

Narrow it down

Choose your favorite idea (feel free to group two or three together into one big idea)

This is the workshop topic you'll be creating for the rest of the session

One workshop per group

Backward Design

Pick a ‘tool’ you’ve used to complete a project

i.e. a computer program like excel or Tableau or a coding language, like python or R

An Example:

Think back to the first time you **used (not taught)** that tool and write down all the things you needed to know to effectively use it.

- What was tool-specific?
- What concepts were tool-agnostic?

I.e. Google charts

- Tool-specific: how to organize data in google sheets
- Tool-agnostic: selecting the appropriate chart type for intended purpose

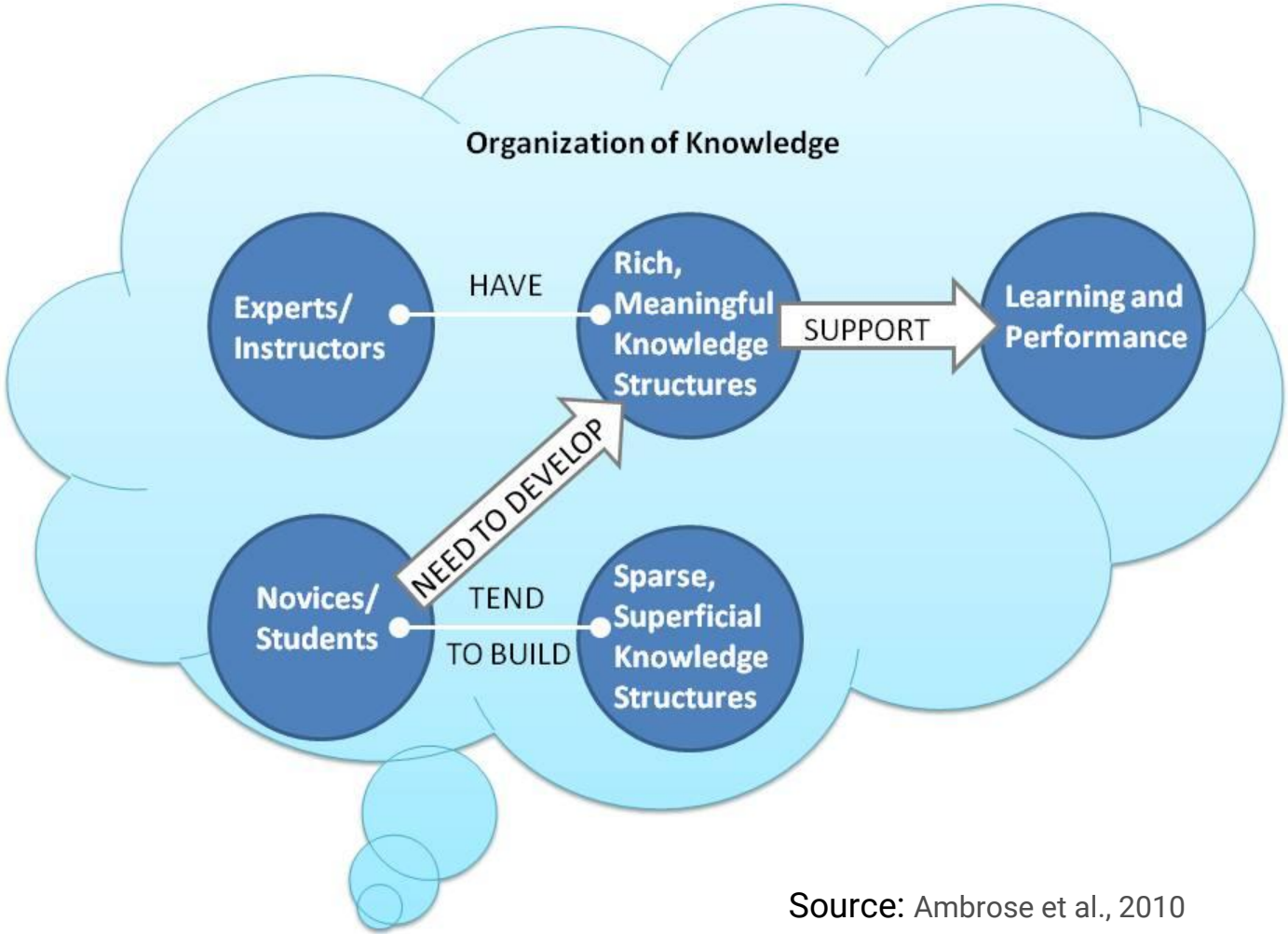
Does this sound familiar?

“[The Anatomy and Physiology course] is organized around the major systems of the body and requires to students to identify and describe the location and function of the major organs, bones, muscles, and tissues in the body….

However, when **asked to explain the relationship** among parts or higher-order principles that cut across systems, the students often fall apart.

- Professor Anand Patel, How Learning Works: Seven Research-Based Principles for Smart Teaching

This is an example of “forward” design



Source: Ambrose et al., 2010

Backward Design

“Teachers are coaches of **understanding**, not mere purveyors of content or activity.

They focus on **ensuring learning,** not just teaching (and assuming that what was taught was learned);

they always aim - and check - for successful meaning-making and transfer by the learner.” (Wiggins and McTighe 4)

Forward Design vs Backward Design

I have to teach students how to use Excel:

I should create some slides that explain the following:

- Referencing
- Formulas
- Functions

I aim to teach students how to decipher and implement the syntax of built-in excel functions:

- What is a function?
- How are functions helpful?
- What is the anatomy of a function?
- Let’s practice using common functions
- How to look up functions

Identify Learning Outcomes

“Teaching is a means to an end, and planning precedes teaching. The most successful teaching begins, therefore, with clarity about desired learning outcomes and about the evidence that will show that learning has occured.” (Wiggins and McTighe 7)

Learning Outcomes

- Identify various types of data sources Tableau can work with and upload a csv file [Skill]
- Understand Tableau interface and how to use the Columns, Rows, and Marks to create different kinds of visualization types [Knowledge]
- Select best visualization type for data type, goal, and audience [Understanding]

Kinds of Learning Outcomes:

- Skills => actions
- Knowledge => facts
- Understanding => connections, relationships, application

Learning Outcomes Examples

Select a workshop in the GitHub repository to review. Go through the slides and/or activity guides.

- Are there clear learning outcomes?
- If not, after going through the materials, what would you say are the learning objectives?
- Is there anything missing that you think should be included?
- Anything surprising?

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Draft your learning objectives

REMEMBER	UNDERSTAND	APPLY	ANALYZE	EVALUATE	CREATE
Cite	Articulate	Compute	Calculate	Argue	Act
Define	Ask	Construct	Categorize	Assess	Arrange
Find	Characterize	Demonstrate	Compare	Check	Assemble
Identify	Clarify	Employ	Contrast	Convince	Build
Indicate	Classify	Exercise	Correlate	Critique	Compose
Label	Describe	Illustrate	Deconstruct	Debate	Construct
List	Discuss	Make	Detect	Decide	Create
Locate	Elaborate	Model	Diagram	Defend	Design
Match	Estimate	Operate	Differentiate	Determine	Develop
Memorize	Explain	Perform	Distinguish	Judge	Formulate
Name	Infer	Plot	Examine	Justify	Generate
Outline	Interpret	Practice	Experiment	Measure	Improve
Quote	Paraphrase	Present	Graph	Predict	Invent
Recall	Recognize	Produce	Integrate	Prioritize	Modify
Recite	Report	Provide	Order	Rank	Plan
Recognize	Restate	Show	Organize	Rate	Prepare
Repeat	Summarize	Sketch	Select	Recommend	Revise
Reproduce	Translate	Solve	Sequence	Reflect	Synthesize
State	Visualize	Use	Solve	Relate	Write

Source: https://studentaffairs.ku.edu/sites/studentaffairs.ku.edu/files/docs/How_to_write_Learning_Outcomes_Worksheet.pdf

Develop a Learning Plan

Creating “Activities”

Can include:

- Modeling/follow along
- Lecture
- Hands-on problem-solving time (individual and group)
- Discussion

Any other interesting techniques/activities you have seen?

Pick a workshop in the Github repo and identify an activity. Does it match the learning objectives? In your group, come up with another way to teach this.

Create an activity to help meet one of your learning objectives

Using your learning objectives, create an activity that would help meet it

Share your activity with a group

- Share the activity without the learning objective
- Try to identify each others' learning objective
- Note any moments of possible confusion
- What would happen if someone got confused? Is there anything that can be done to catch them up?

Assessment

Informal assessment in workshops can help you gauge student understanding and make small adjustments to improve learning throughout the session

Ideas:

- Pre-workshop survey
- “Show of hands” question
- Circulating during hands-on time
- Listening in to small group discussions
- Addressing questions or confusions that arise during large group discussions

Create another activity!

- Activities can be hard to come up with---look at examples from other workshops to inspire you
- Ask your colleagues
- Look at examples from other institutions

Common issues when teaching “techy” workshops & some ways we handle it...

- People’s exposure and anxiety levels around tech really varies
- Tech can break/not work
- People can get really left behind and that decreases motivation
- Different hardware acts differently

Possible ways to manage…

Work on your workshop

Are there opportunities for informal assessment?

Are there any potential challenges that may occur?

Workshop your workshop!

Get feedback from your group.

Share with everyone

https://go.ncsu.edu/working-on-workshops

- See workshops that NCSU teaches
- Add a folder and workshops from your institution via pull request
- Create issues to suggest improvements